A collaborative workshop on aquatic models and 21st century toxicology

Leveraging small aquarium fishes to advance understanding of environmentally influenced human disorders and diseases

Draft Workshop Agenda

May 5, 2014 (8:00 am–5:00 pm)

7:30–8:00 Registration

8:00-8:10 Welcome

Daniel Solomon, Ph.D.
Dean, College of Sciences
North Carolina State University
Raleigh, NC

8:10-8:15 Welcome

Warren Casey, PhD, DABT
National Toxicology Program (NTP) Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM)
National Institute of Environmental Health Sciences (NIEHS),
Research Triangle Park, NC

8:15-8:30 Workshop Overview

Antonio Planchart, PhD
Assistant Professor
Department of Biology
North Carolina State University
Raleigh, NC

OPENING SESSION (8:30–9:45am)

8:30-8:35 Introduction to Opening Session

8:35-9:00 Dan Villeneuve—Aquatic Models in Regulatory Testing for EPA

Aquatic animal models – Not just for ecotox anymore

9:00-9:25 Jyotshnabala Kanungo—Using Aquatic Vertebrate Models at FDA

Zebrafish embryo in drug safety assessment

9:25-9:50 Matthew Winter—European Perspective on the Use of Aquatic Vertebrate Models

The use of zebrafish for drug safety assessment within the pharmaceutical industry: An (ex) insider's perspective

9:50–10:05 **Break**

SESSION 1 — Cardiovascular Toxicology (10:05am-12:10pm)

Session Chairs — Maria Bondesson and Seth Kullman

10:05-10:10 Introduction to Session 1

10:10-10:40 Maria Bondesson—University of Houston

Screening for vascular disruptor compounds *in vivo* and *in vitro*

10:40-11:10 Warren Heideman—University of Wisconsin

TCDD and AHR in the zebrafish heart

11:10-11:40 Dave Volz—University of South Carolina

High-content screening assay for identification of chemicals impacting cardiovascular function in zebrafish embryos

11:40-12:10 Ken Poss—Duke University

Epicardial cells and heart regeneration

12:10–1:20 **LUNCH**

SESSION 2 — Developmental Processes in Toxicology and Disease (1:20-2:55pm)

Session Chairs — Maria Bondesson and Seth Kullman

1:20-1:25 Introduction to Session 2

1:25-1:55 Shawn Burgess—NIH

Development of a rapid *in vivo* chemical screening method for the identification of antimetastatic compounds

1:55-2:25 Mark Hahn—Woods Hole Oceanographic Institution

Diversity as opportunity: Using fish models to understand the role of conditional transcription factors in mechanisms of developmental toxicity

2:25-2:55 Nancy Denslow—University of Florida

Growth of the mosquitofish anal fin in response to androgens and progestins

2:55-3:15 **Break**

SESSION 3 — Emerging Technologies (3:15-5:20pm)

Session Chairs — Keith Cheng and Carolyn Mattingly

3:15-3:20 Introduction to Session 3

3:20-3:50	Keith Cheng—Penn State Hershey Pathology and Laboratory Medicine
	Micron-scale synchrotron x-ray tomography as a tool for pancellular 3D assessment of cellular and tissue architecture
3:50-4:20	Matthew Harris—Children's Hospital Boston
	Evolution's experiments: use of Teleost diversity to mine the genetic regulation of development, physiology, and behavior
4:20-4:50	David Reif—North Carolina State University
	Rapid identification and characterization of neuromodulator chemicals using an embryonic zebrafish system
4:50-5:20	Rodolphe Barrangou—North Carolina State University
	CRISPR-Cas9 systems and genome editing applications

5:20-5:30 Day 1 Wrap Up

Sponsor Hosted Reception and Poster Session (6:30-8:30pm)

May 6, 2014 (8:00 am–4:15 pm)

SESSION 4 —Models of Neurobehavior and Neurotoxicology (8:00-10:55am)

Session Chairs — Stephanie Padilla and Mamta Behl

8:00-8:05	Introduction to Session 4
8:05-8:35	Michael Carvan—University of Wisconsin
	Assessing the subtle neurological effects of environmentally-relevant methylmercury exposures in zebrafish
8:35-9:05	Marc Ekker—University of Ottawa
	Transgenic zebrafish models for the study of dopamine neuron development, loss, and regeneration
9:05-9:35	Stephanie Padilla—US Environmental Protection Agency
	Functional assays and alternative species: Using larval zebrafish in developmental neurotoxicity screening
9:35-9:55	**Break**
9:55-10:25	Andrew Rennekamp—Massachusetts General Hospital
	Zebrafish as a tool for rapid, in vivo detection of small molecule effects on the vertebrate brain
10:25-10:55	Jeff Bronstein—University of California, Los Angeles
	Studying Parkinson's disease-related environmental toxins using zebrafish

SESSION 5 — Predicting Alterations to the Immune System (10:55am-12:00pm)

Session Chairs — Stephanie Padilla and Mamta Behl

10:55-11:00	Introduction to Session 5
11:00-11:30	Carol Kim—University of Maine
	Gene-environment interactions: Effects of arsenic on the innate immune response
11:30-12:00	Jeff Yoder—North Carolina State University
	Strategies for *in vivo* immunotoxicology assays with zebrafish larvae
12:00-1:05	**LUNCH**

SESSION 6 — Emerging Issues (1:05-3:10pm)

Session Chairs — Robert Tanguay and Jon Hamm

1:05-1:10	Introduction to Session 6
1:10-1:40	Robert Tanguay—Oregon State University
	In vivo behavioral and morphological screening of a 1078 chemical library using Zebrafish
1:40-2:10	Jared Goldstone—Woods Hole Oceanographic Institution
	Cytochrome P450 in fish
2:10-2:40	John Rawls—Duke University
	Zebrafish models for investigating environmental regulation of adiposity
2:40-3:10	John Colbourne—The University of Birmingham
	Towards a science-driven solution for cooperative and effective management of chemical risks
3:10-3:30	**Break**

Workshop Summary Discussion and Closing Remarks (3:30 – 5:00pm)